TOF Module Placement Simulation

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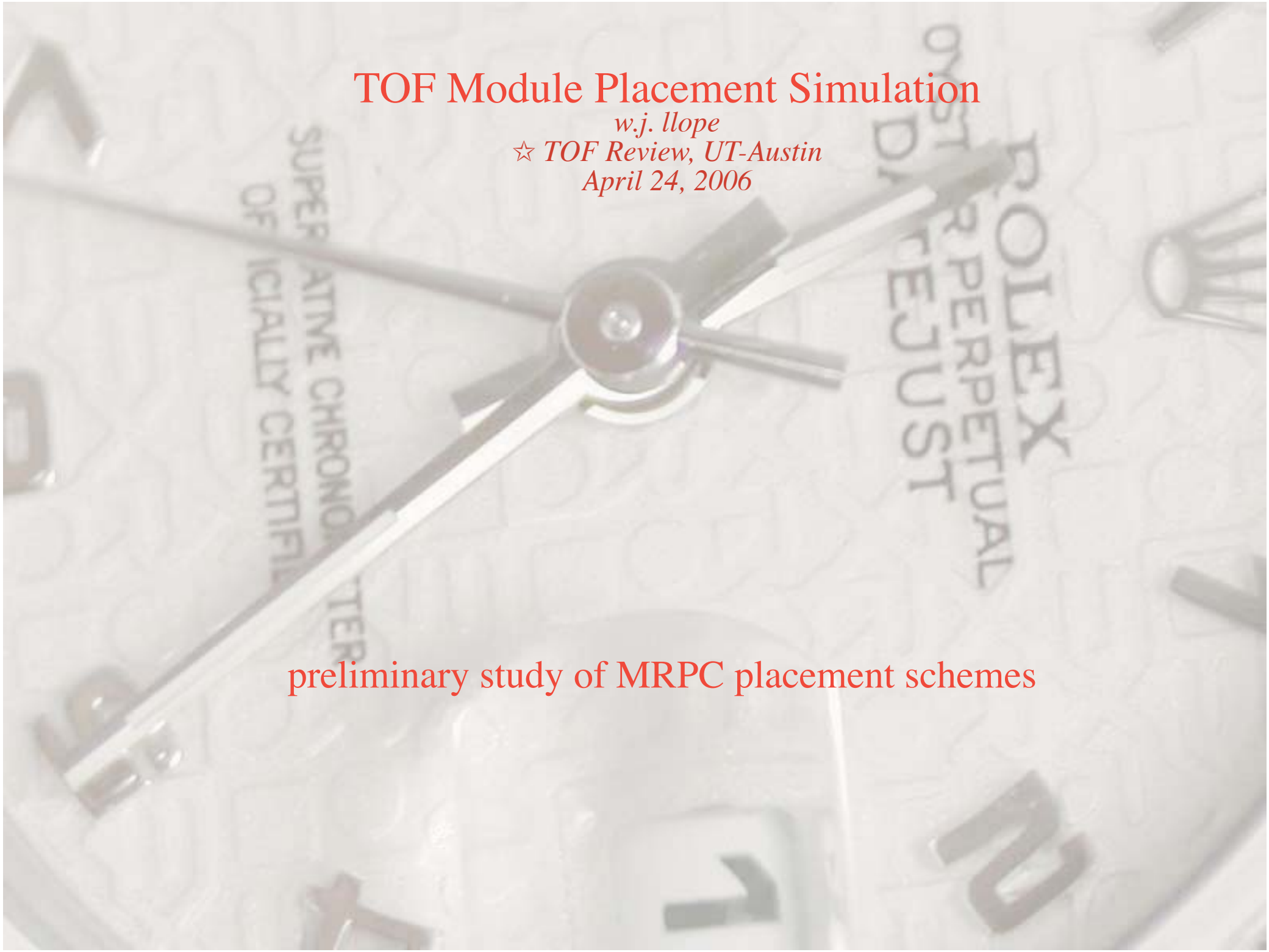
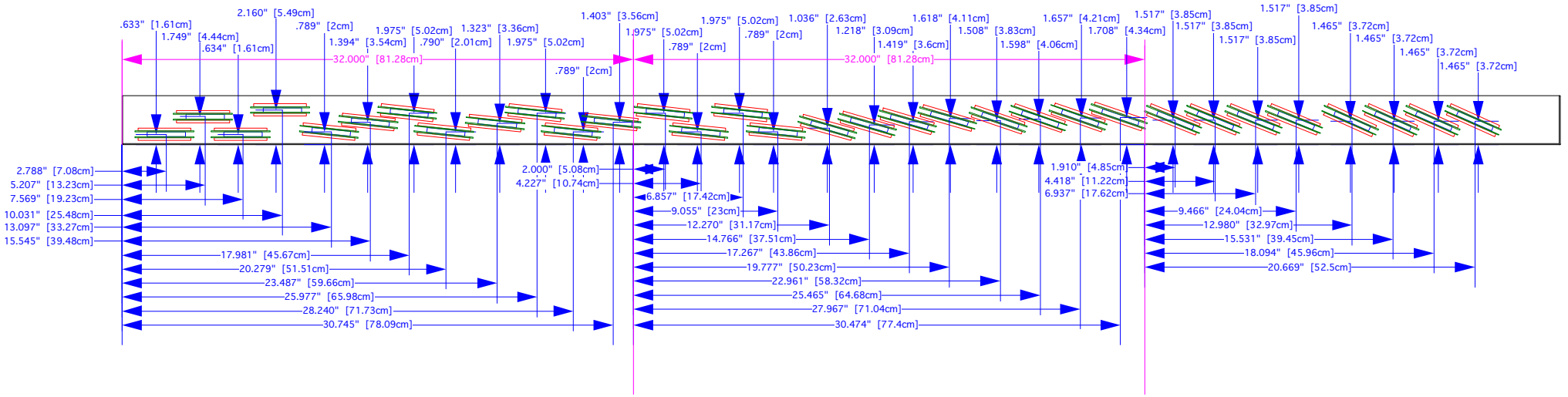
☆ *TOF Review, UT-Austin*
April 24, 2006

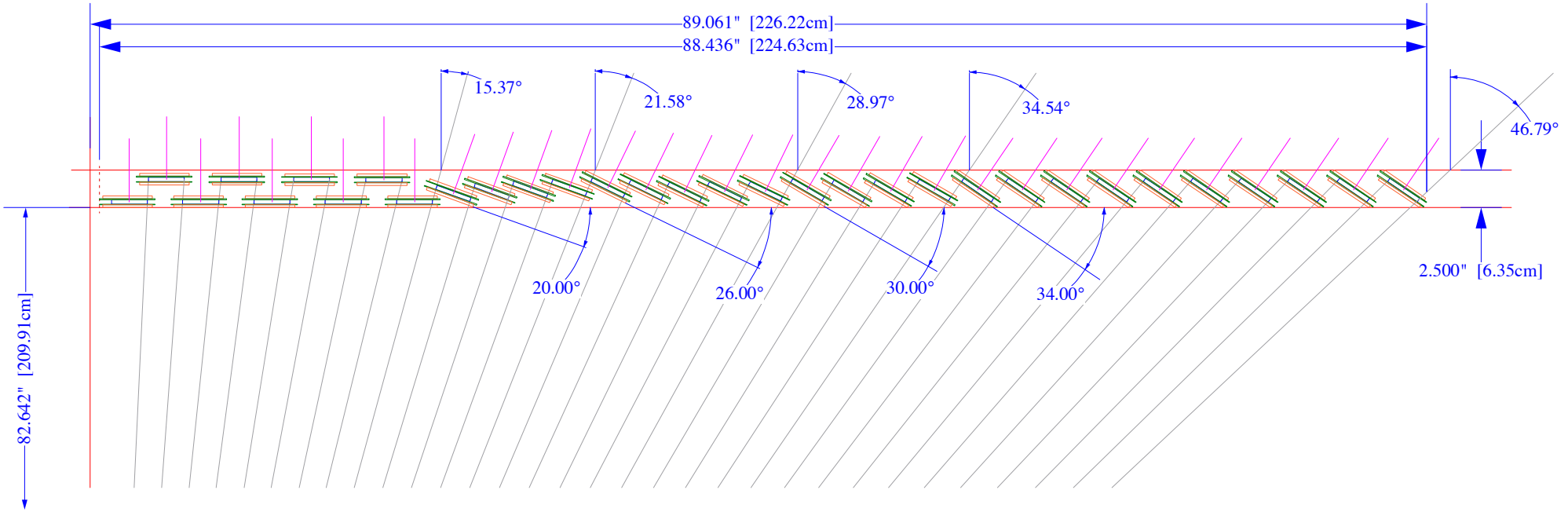


preliminary study of MRPC placement schemes

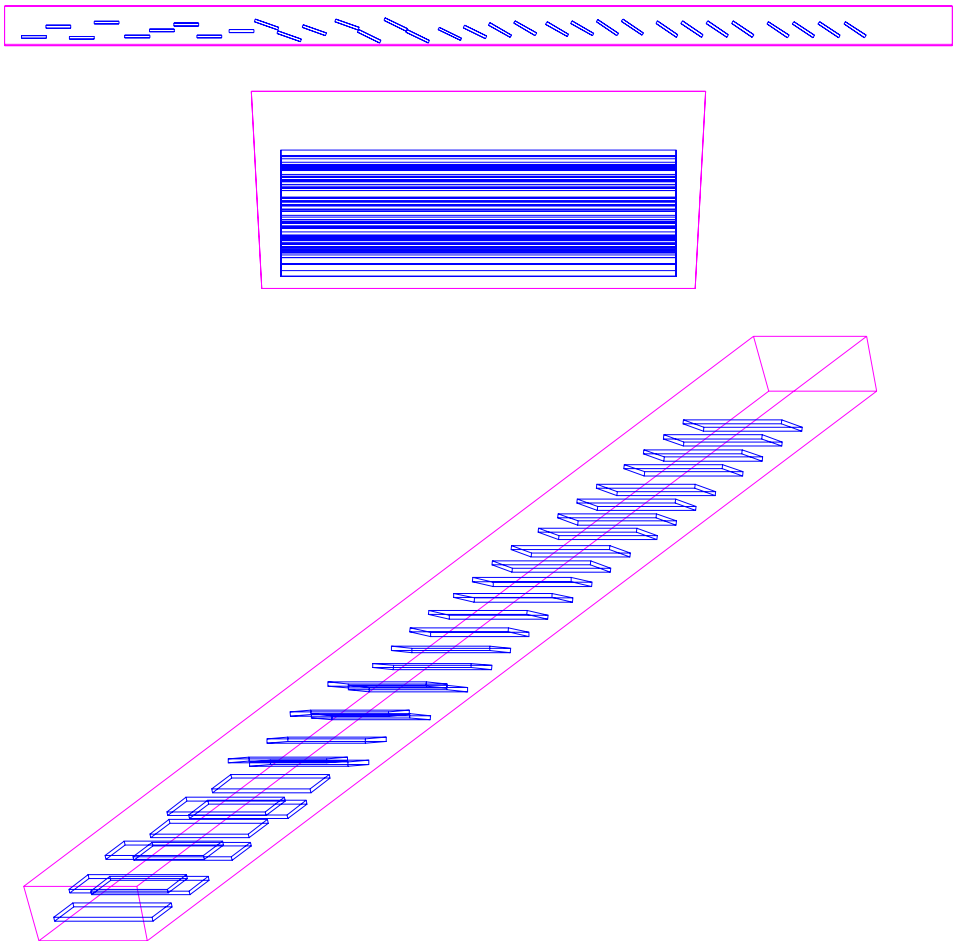
TOFr5



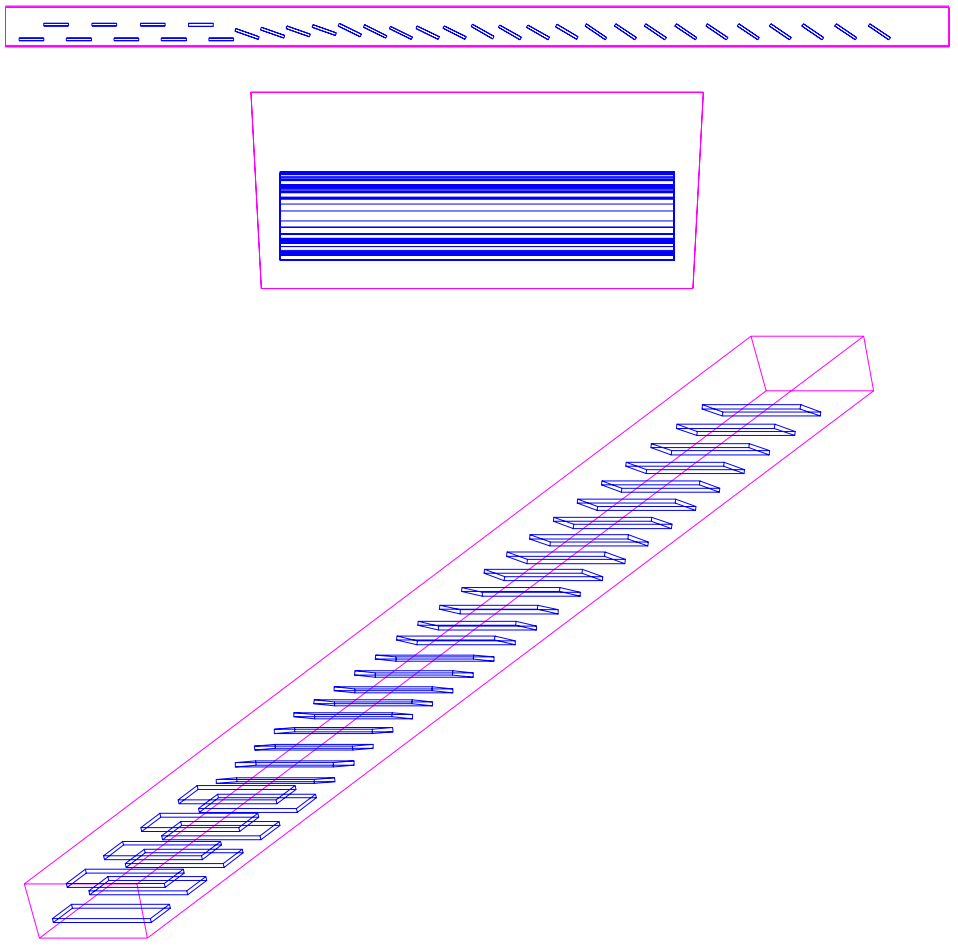
TOF (present draft)



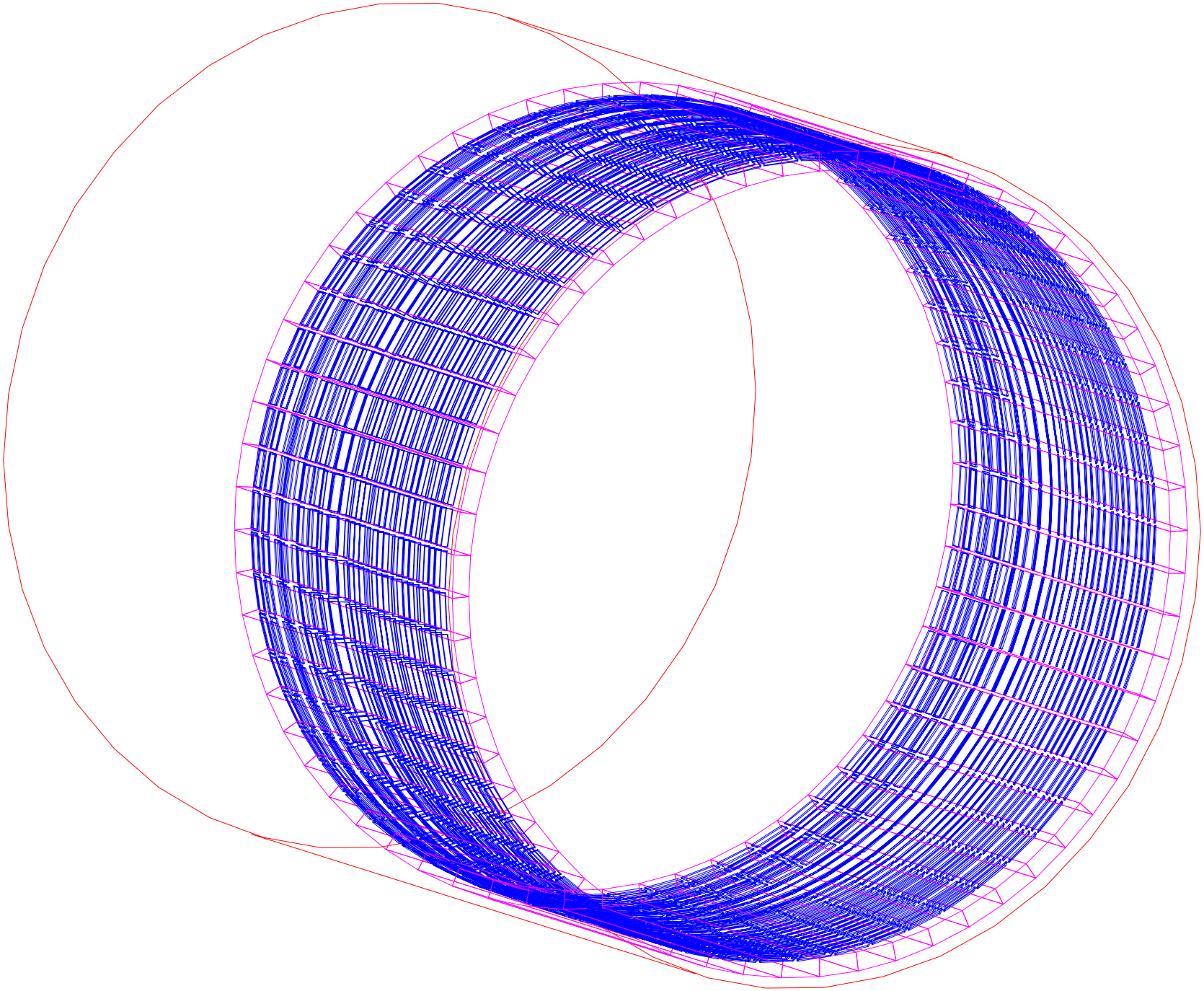
TOFr5



TOF



define half-barrel only, generate tracks over full +/- range of Zvtx



open question(s) as to positioning of MRPCs w.r.t. tray body

- not all geometries are possible
- best possible acceptance
- most normal angles of incidence
- study phi,eta,Zvtx dependence of acceptance
  - holes on ‘same side’
  - double hits on ‘opposite side’

new geant code...

- throw single tracks and plot probabilities for Nhit = 0, 1, 2
- 10 GeV protons
- cave geometry is vacuum + tof only, geometry is rigorous though
- MRPC detectors are active air
  - & the size of the inner glass stack only
- positioning and angles
  - Rmin = 209.91cm
  - Y,Z = picked off CADD files
- no field at the moment

lots of directions to go with this, here’s some preliminary plots...

- code is very simple (<100 lines), very fast, and easy to extend

eta acceptance

no Zvtx smearing here

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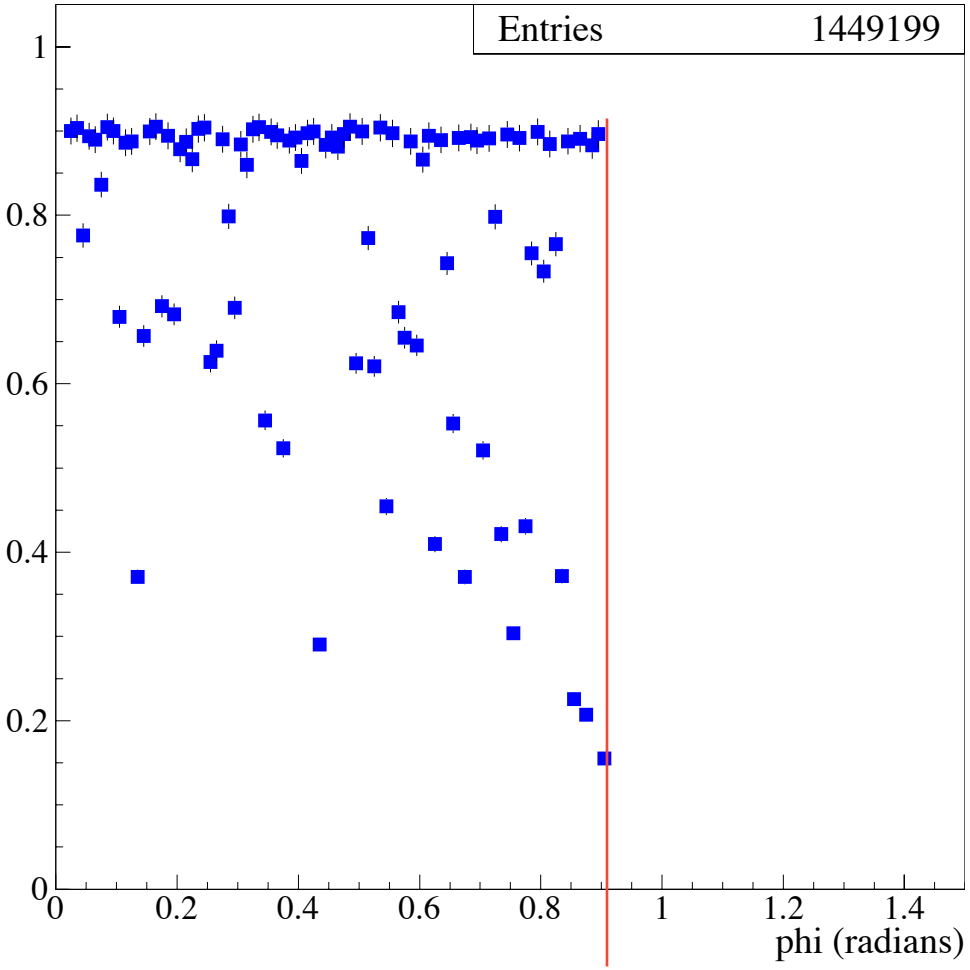
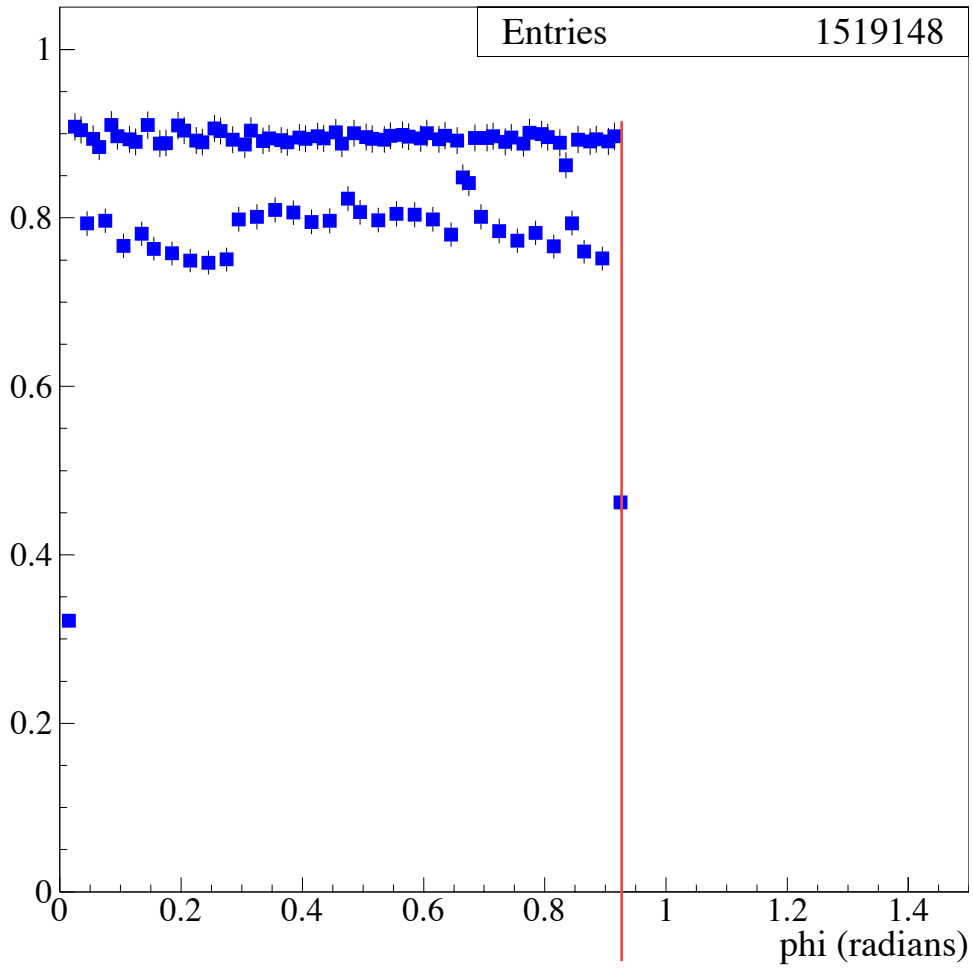


TOF



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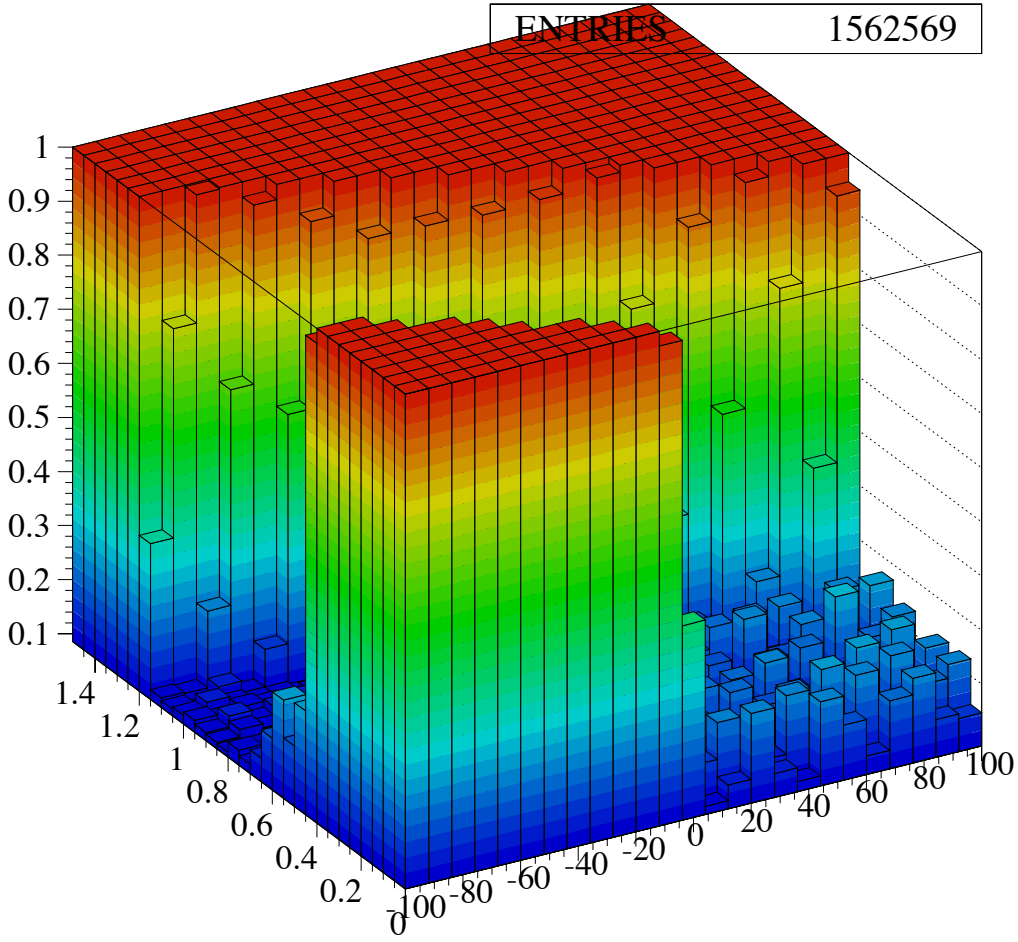
ENTRIES 1562569
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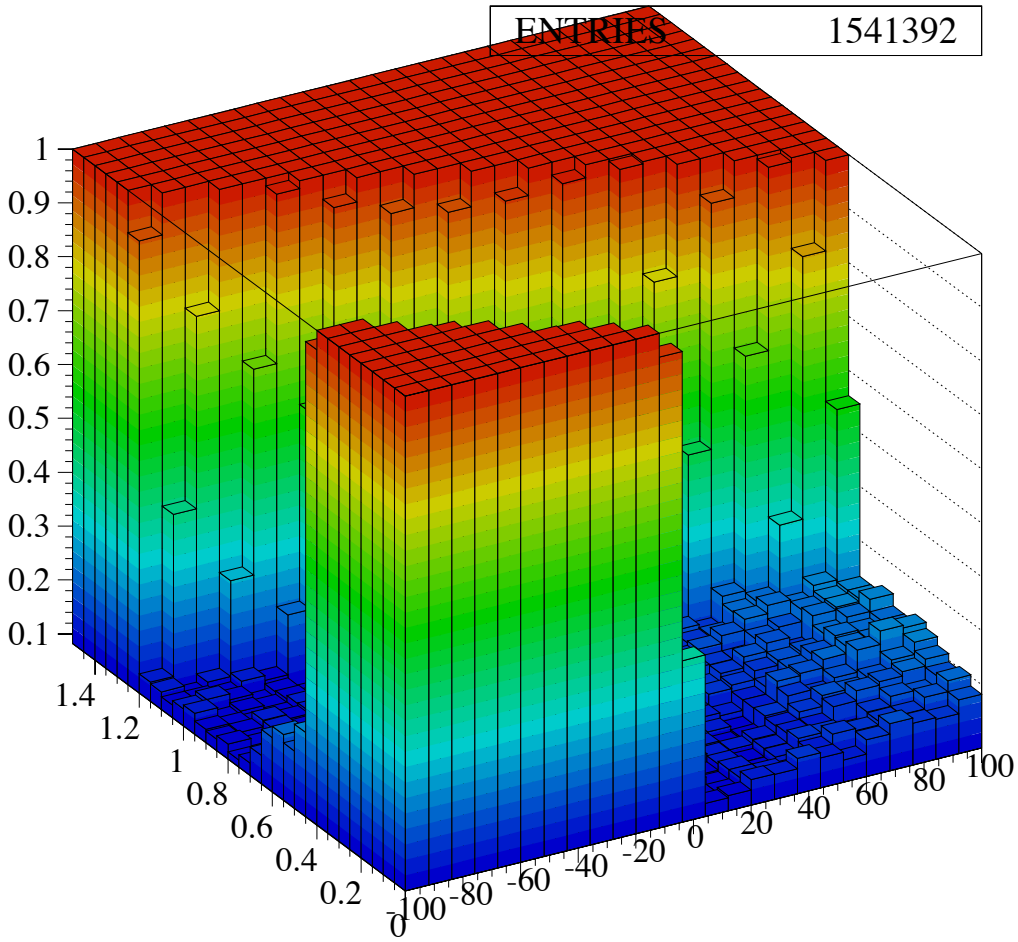
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-100 -80 -60 -40 -20 0 20 40 60 80 100

TOF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0.5
0.4
0.3
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0.1
1.4
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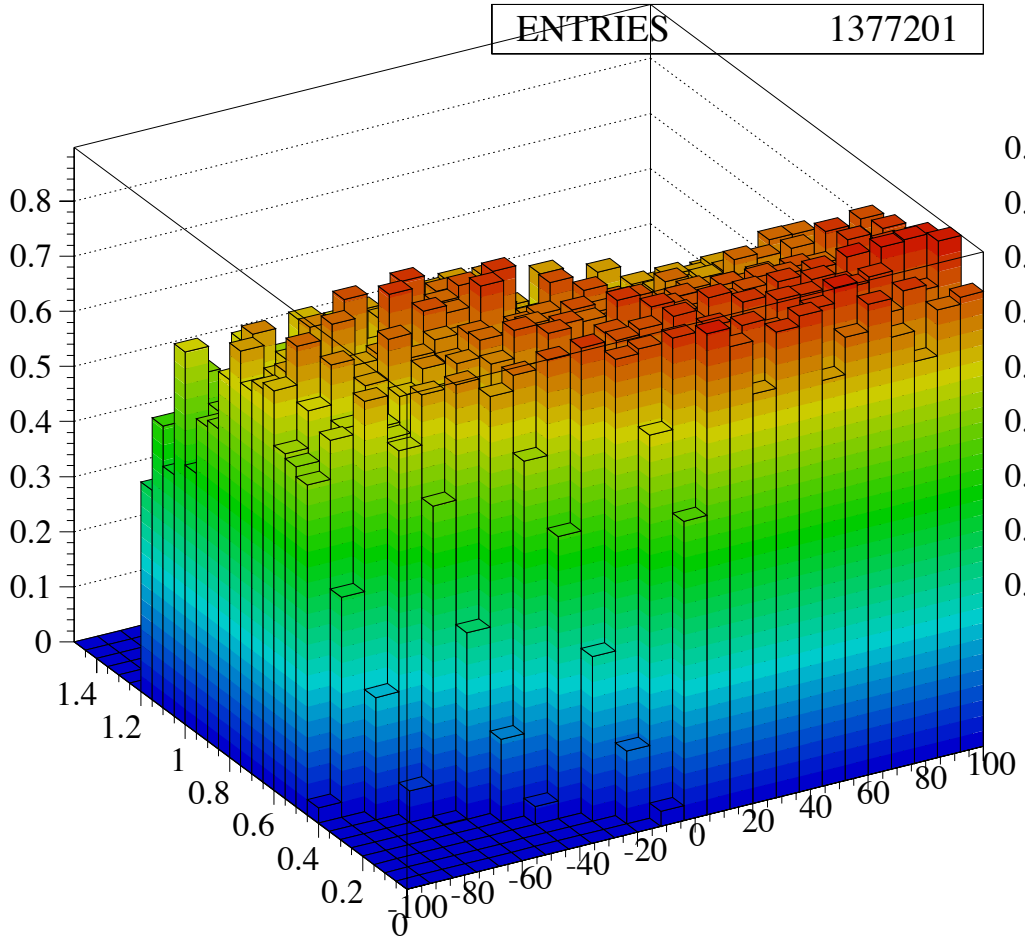
1
0.8
0.6
0.4
0.2
0
-100 -80 -60 -40 -20 0 20 40 60 80 100

TOFr5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0.5
0.4
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0.1
0
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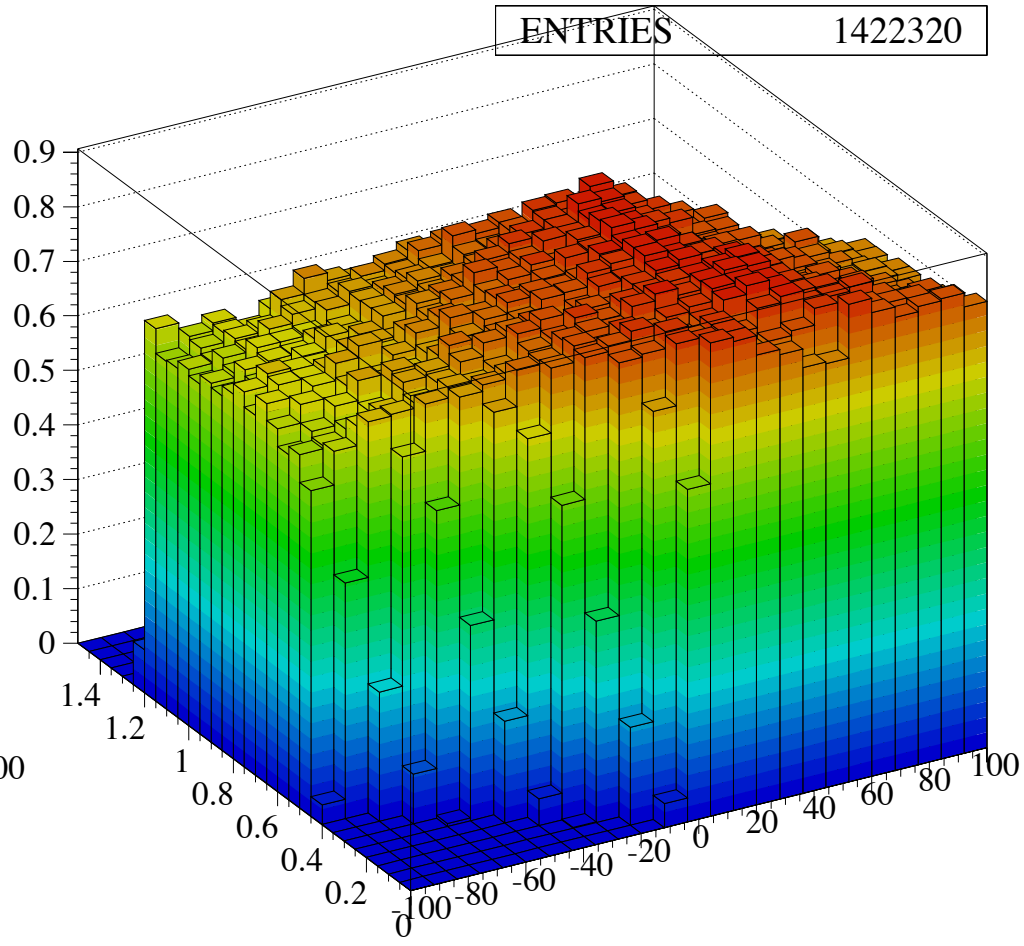
1
0.8
0.6
0.4
0.2
0
-100 -80 -60 -40 -20 0 20 40 60 80 100

TOF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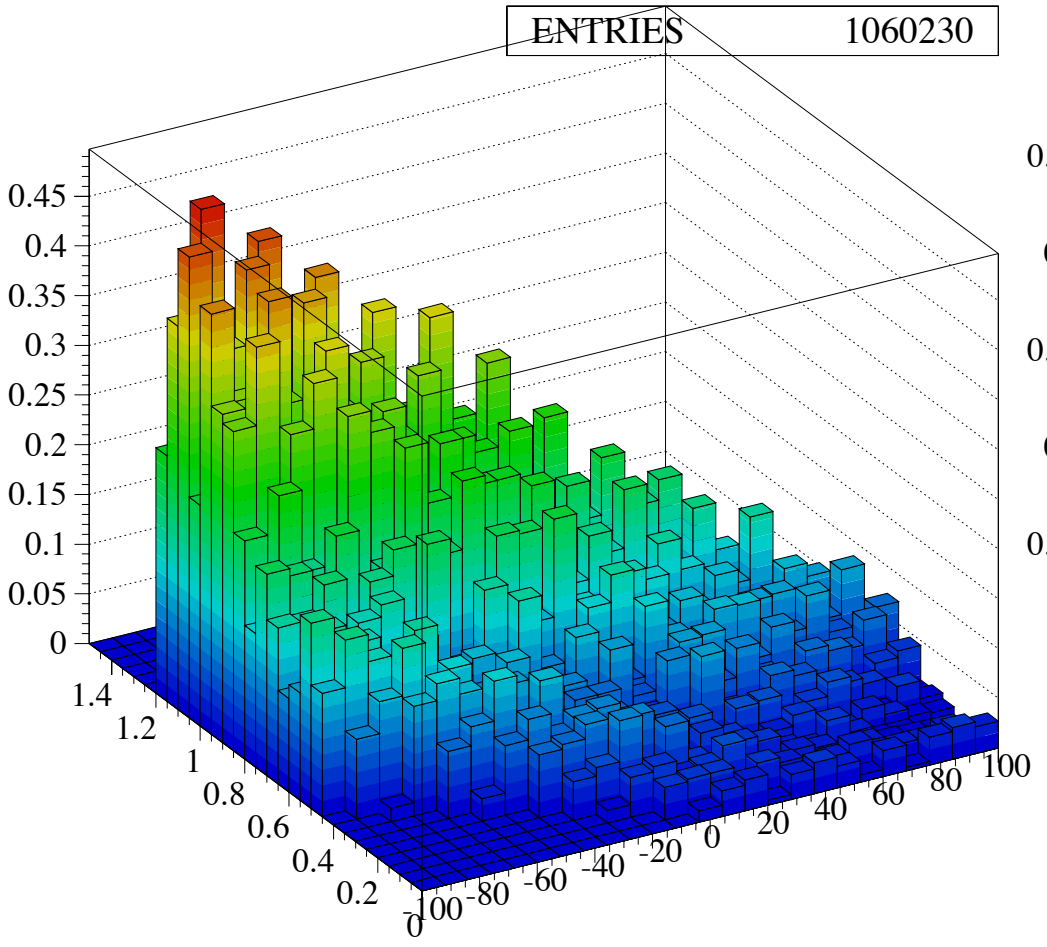
0.2
0.1
0
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-100 -80 -60 -40 -20 0 20 40 60 80 100

TOFr5


ENTRIES 1060230
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0.05
0
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1
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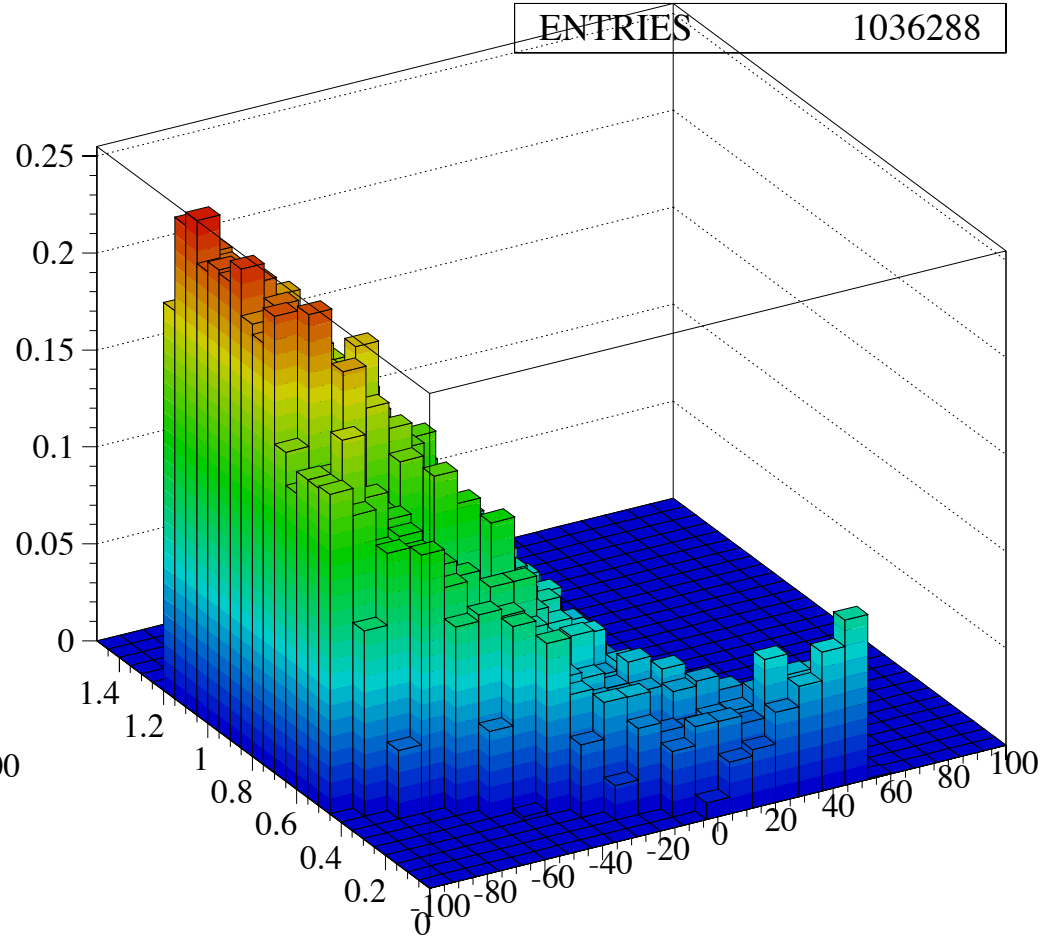
0.6
0.4
0.2
0
-100 -80 -60 -40 -20 0 20 40 60 80 100

TOF


ENTRIES 1036288
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0.15
0.1
0.05
0
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-100 -80 -60 -40 -20 0 20 40 60 80 100